



TENNESSEE DEPARTMENT OF

EDUCATION
FIRST TO THE TOP

Health Science Education

Primary Career Cluster:	Health Science
Consultant:	Sheila Carlton, (615) 532-2839, Sheila.Carlton@tn.gov
Course Code(s):	5998
Prerequisite(s):	None
Credit:	1
Grade Level:	9
Graduation Requirement Substitution:	None
Programs of Study and Sequence:	This is the first course in <i>Biotechnology Research, Diagnostic Services, Therapeutic Nursing Services, Emergency Services, Therapeutic Clinical Services, and Public Health</i> programs of study.
Necessary Equipment:	Equipment lists can be found on the Health Science website.
Aligned Student Organization(s):	HOSA: http://www.tennesseehosa.org Amanda Hodges, (615) 532-6270, Amanda.Hodges@tn.gov
Coordinating Work-Based Learning:	If a teacher has completed work-based learning training, he or she can offer placement in Job Shadowing or Clinical Internship. For more information, please visit http://www.tn.gov/education/cte/wb .
Available Student Industry Certifications:	None
Dual Credit or Dual Enrollment Opportunities:	There are no known dual credit/dual enrollment opportunities for this course. If interested in developing, reach out to a local postsecondary institution to establish an articulation agreement.
Teacher Endorsement(s):	577
Required Teacher Certifications/Training:	None
Teacher Resources:	http://www.tn.gov/education/cte/HealthScience.shtml

Course Description

Health Science Education is an introductory course designed to prepare students to pursue careers in the fields of biotechnology research, therapeutics, health informatics, diagnostics, and support services.

Upon completion of this course, a student proficient in *Health Science Education* will be able to identify careers in these fields, compare and contrast the features of healthcare systems, explain the legal and ethical ramifications of the healthcare setting, and begin to perform foundational healthcare skills. This course will serve as a strong foundation for all of the health science programs of study. Standards in this course are aligned with Tennessee Common Core State Standards in English Language Arts & Literacy in Technical Subjects.*

Program of Study Application

This is the foundational course in the *Biotechnology Research, Diagnostic Services, Therapeutic Nursing Services, Emergency Services, Therapeutic Clinical Services, Medical Administrative Services, and Public Health* programs of study. For more information on the benefits and requirements of implementing these programs in full, please visit the Health Science website at <http://www.tn.gov/education/cte/HealthScience.shtml>.

Course Standards

Career Planning

- 1) Synthesize information found in news media, professional journals, and trade magazines to create a report and/or presentation on the historical evolution of healthcare in the United States. Use a timeline or other graphic to illustrate major developments beginning with the first medical school through today. (TN CCSS Reading 2, 7; TN CCSS Writing 6, 8)
- 2) Prepare a paper or electronic career profile for at least one occupation in each of the five health science career areas (biotechnology research, therapeutic services, support services, health informatics, and diagnostic services), to be included in the student's health science portfolio. Draw on print and online sources, such as government occupational profiles, and/or interviews with health care professionals to capture at minimum the following:
 - a. Job description
 - b. Roles and responsibilities
 - c. Essential knowledge and skills needed for the career
 - d. Programs or paths of study available to reach occupational goals, beginning with high school and proceeding through postsecondary
 - e. Required personality traits for the career
 - f. Licensure and credentialing requirements
 - g. Non-educational job requirements such as physical fitness tests, minimum age, and psychological evaluations
 - h. Photographs or digital prints of each career (refer to HOSA Medical Photography guidelines)(TN CCSS Reading 1, 2; TN CCSS Writing 4, 6, 9)
- 3) Drawing evidence from occupational profiles, industry journals, and textbooks, summarize the professional traits (such as leadership, ethical responsibility, and time management) required of healthcare professionals in the twenty-first century. (TN CCSS Reading 1; TN CCSS Writing 9)



Healthcare Systems

- 4) Identify the types and defining features of healthcare systems in the United States. Compare and contrast these systems with those of other countries that have a high efficiency score in healthcare as rated by agencies such as the World Health Organization. Create a report and/or presentation on these comparisons. (TN CCSS Reading 1, 5; TN CCSS Writing 7, 8, 9)
- 5) Compare and contrast the average cost for a procedure such as childbirth, CT scan, and/or heart catheterization in the United States versus the average costs in Canada, Mexico, France, Japan, and/or other countries that have high efficiency scores in healthcare. Translate the information into a table, chart, graph, or other visual representation. Cite specific textual evidence to support the analysis. (TN CCSS Reading 1, 5; TN CCSS Writing 7)
- 6) Differentiate among the methods of payment for healthcare in the United States. Include private and state or federal insurance, health savings accounts, managed care, Veteran's Health Administration, Military Health System/TRICARE, and long-term care. (TN CCSS Reading 1, 9)
- 7) Investigate current innovations in healthcare. Develop pro and con arguments based on information found in news media, professional journals, and trade magazines on how innovations have influenced the healthcare system. Support arguments with evidence presented in oral, visual, or written format. (TN CCSS Reading 1, 2, 9; TN CCSS Writing 1, 8, 9)

Body Function and Structure

- 8) Outline basic concepts of normal structure and function of all body systems, and explain how homeostasis is maintained. (TN CCSS Reading 2)
- 9) Describe how Maslow's Hierarchy of Needs can affect the physical, social, psychological, and behavioral status of a person. Use technology to produce a visual or digital chart or table to explain the information obtained from published or digital text. (TN CCSS Reading 1; TN CCSS Writing 6, 9)
- 10) Generate an informational brochure that explains to community members the biophysical, mental/cognitive, social, and emotional development of patients at various stages of the life cycle: infancy, toddler, school age, adolescence, and adulthood (young, middle, and older). Cite textual evidence to support explanations. (TN CCSS Reading 1; TN CCSS Writing 9)
- 11) Distinguish between the medical definitions of health and wellness, identifying preventive measures and behaviors that promote each. Discuss contemporary controversies to wellness theories, such as but not limited to the debates surrounding electronic medical records, the use of performance-enhancing supplements for athletes, and alternative diets. (TN CCSS Reading 5)



- 12) Develop a patient health education presentation surrounding one of the following wellness issues: optimal health, exercise and fitness, healthy eating and nutrition, sleep, stress or other mental health issues, drug/alcohol/tobacco use and abuse, body decoration, sexually transmitted infections, or cyber safety. Include signs and symptoms of the behavior and/or disease, major physical concerns associated with it, preventive measures, treatments, and support systems. Include at least three resources. (TN CCSS Reading 1, 3, 5; TN CCSS Writing 2, 4, 7, 9)

Infection Control/Medical Microbiology

- 13) Define chain of infection and provide strategies of how to break each part of the chain to prevent infection. Conduct a short research project on the effects of practices of sanitation and disinfection on health and wellness, examining the implications for public health. Synthesize findings in a written, oral, or digital presentation, citing evidence from the investigation. (TN CCSS Reading 1; TN CCSS Writing 6,7)
- 14) Understand the principles of and successfully perform the following skills to prevent or curtail the spread of pathogenic and non-pathogenic organisms:
- a. Hand washing
 - b. Gloving
- (TN CCSS Reading 3)

Foundational Healthcare Skills

- 15) Review health topics surrounding complementary and alternative medicine such as acupuncture, biofeedback, and herbal treatments. Develop a public service announcement or academic poster presentation intended to inform consumers or health professionals about the specific topic. Include general information, purported benefits, uses in the United States, side effects and/or risks, relevant research, cost, and links to more information. Cite evidence from print and digital resources such as research journals, the National Institute of Health, the Mayo Clinic, and Medline Plus. (TN CCSS Reading 1, 9; TN CCSS Writing 2, 6, 8, 9)
- 16) Understand principles of and successfully perform skills related to Emergency Medicine, incorporating rubrics from the American Heart Association or American Red Cross for the following:
- a. Basic First Aid care of bleeding and wounds
 - b. Basic First Aid care for burns
 - c. Basic First aid for bone and joint injuries
- (TN CCSS Reading 3)
- 17) Understand principles of and successfully perform skills related to Dental Assisting, incorporating rubrics from textbooks or clinical standards of practice for the following:
- a. Identifying teeth using the Federation Dentaire International Numbering System
 - b. Demonstrate brushing and flossing techniques
- (TN CCSS Reading 3)



- 18) Understand principles of and successfully perform skills related to Medical Laboratory Assisting, incorporating rubrics from textbooks or clinical standards of practice for the following:
- Obtain a culture specimen and streak an agar plate (this may be simulated on paper)
- (TN CCSS Reading 3)
- 19) Understand principles of and successfully perform skills related to Medical Assisting Skills, incorporating rubrics from textbooks or clinical standards of practice for the following:
- Temperature, pulse, respiration and blood pressure assessment
 - Screening for vision problems
- (TN CCSS Reading 3)
- 20) Understand principles of and successfully perform skills related to Physical Therapy Skills, incorporating rubrics from textbooks or clinical standards of practice for the following:
- Ambulation with crutches or cane
 - Administering cold applications
- (TN CCSS Reading 3)
- 21) Understand principles of and successfully perform skills related to Athletic Training, incorporating rubrics from textbooks or clinical standards of practice for the following:
- Assessment of athlete with injured ankle or wrist
 - Basic stretching exercises
- (TN CCSS Reading 3)
- 22) Understand principles of and successfully perform skills related to Forensic Scientist, incorporating rubrics from textbooks or clinical standards of practice for the following:
- Extraction of basic DNA
- (TN CCSS Reading 3)

The following artifacts will reside in the student's portfolio:

- Career Exploration portfolio
- Skills performance rubrics
- Documentation of job shadowing hours
- Examples of written, oral, or digital presentations
- Short research project documents
- Examples of public service announcement scripts, community awareness, health education portfolio

Standards Alignment Notes

*References to other standards include:

- TN CCSS Reading: [Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects](#); Reading Standards for Literacy in Science and Technical Subjects 6-12; Grades 9-10 Students (page 62).
 - Note: While not directly aligned to one specific standard, students who are engaging in activities outlined above should be able to also demonstrate fluency in Standard 10 at the conclusion of the course.



- TN CCSS Writing: [Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects](#); Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6-12; Grades 9-10 Students (pages 64-66).
 - Note: While not directly aligned to one specific standard, students who are engaging in activities outlined above should be able to also demonstrate fluency in Standards 5 and 10 at the conclusion of the course.

Additional Notes

**Informational artifacts include but are not limited to brochures, posters, fact sheets, narratives, essays, and presentations. Graphic illustrations include but are not limited to charts, rubrics, drawings, and mode

